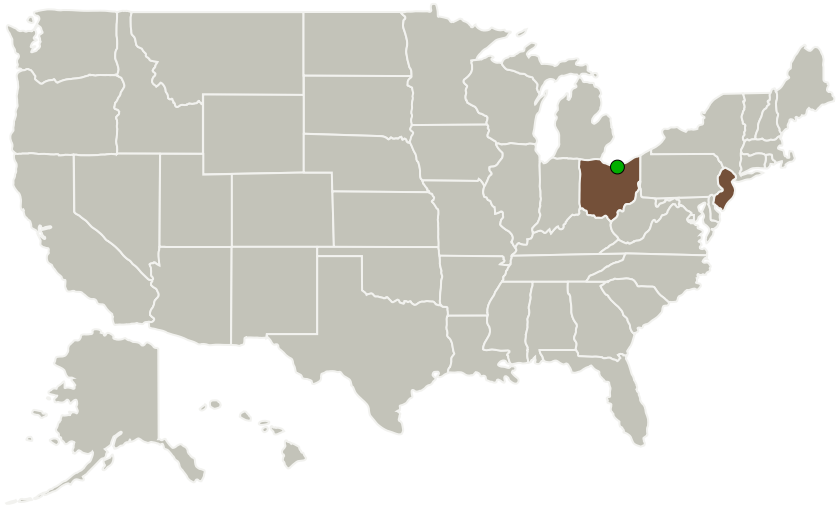
Blade Vibration Measurement System for Unducted Fans, Phase II

Completed Technology Project (2011 - 2013)

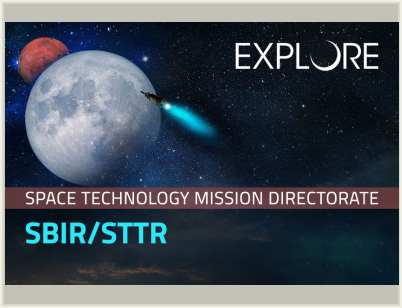
Project Introduction

With propulsion research programs focused on new levels of efficiency and noise, there are two emerging avenues for advanced gas turbine technology: the geared turbofan and ultra-high bypass ratio fan engines. Both of these candidates are being pursued as collaborative research projects between NASA and the engine OEMs. The high bypass concept from GE Aviation is an unducted fan which features a bypass ratio of over thirty, along with the accompanying benefits in fuel efficiency. The innovation being developed in this project is improvement is the test and measurement capabilities of the unducted fan blade dynamic response. In the course of this project, Mechanical Solutions, Inc. (MSI) will work with GE Aviation to define the requirements for fan blade measurements, to leverage MSI's radar-based system for compressor and turbine blade monitoring, and to develop, validate and deliver a non-contacting blade vibration measurement system for unducted fans.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Mechanical Solutions, Inc.	Lead Organization	Industry	Whippany, New Jersey
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Primary U.S. Work Locations	
New Jersey	Ohio

Project Transitions

June 2011: Project Start

May 2013: Closed out

Closeout Summary: Blade Vibration Measurement System for Unducted Fans, Phase II Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138727)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Mechanical Solutions, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

William D Marscher

Co-Investigator:

William Marscher

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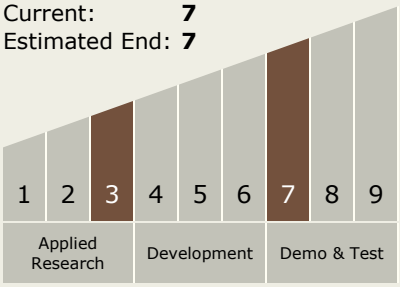
Technology Maturity (TRL)

Start: **3**
Current: **7**
Estimated End: **7**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System